

# Neues in GRASS GIS 7.2?

## Der neue stable Release

Markus Neteler  
Otto Dassau

[www.mundialis.de](http://www.mundialis.de)  
[www.gbd-consult.de](http://www.gbd-consult.de)

FOSSGIS 2017 in Passau



# Neues in GRASS GIS 7.2?



The screenshot displays the GRASS GIS 7.2.0 interface with three main windows:

- GRASS GIS Simple Python Editor:** Contains a Python script for processing geodetic points. The script includes functions for cleanup, main execution, and handling options like 'region', 'encoding', and 'datum\_transform'.
- GRASS GIS 7.2.svn Map Display: 1 - Location: nc\_spm\_08\_grass7@practice\_2:** Shows a map of a region with a hexagonal grid overlay. The map is color-coded to represent the density of geodetic points, with a legend on the right ranging from 1 (dark purple) to 13 (yellow). A scale bar indicates 10 km.
- GRASS GIS 7.2.svn Layer Manager:** Lists various processing modules such as 'v.buffer', 'v.outlier', 'v.what.vect', and 'v.perturb'. The 'v.perturb' module is currently selected.

```
# initialize global vars
TMPLOC = None
SRCGISRC = None
GISDBASE = None

def cleanup():
    # remove temp location
    if TMPLOC:
        grass.try_rmdir(os.path.join(GISDBASE, TMPLOC))
    if SRCGISRC:
        grass.try_remove(SRCGISRC)

def main():
    global TMPLOC, SRCGISRC, GISDBASE
    overwrite = grass.overwrite()

    # list formats and exit
    if flags['f']:
        grass.run_command('v.in.ogr', flags)
        return 0

    # list layers and exit
    if flags['l']:
        try:
            grass.run_command('v.in.ogr', flags)
        except CalledModuleError:
            return 1
        return 0

    OGRdatasource = options['input']
    output = options['output']
    layers = options['layer']

    vflags = ''
    if options['extent'] == 'region':
        vflags += 'r'
    if flags['o']:
        vflags += 'o'

    vopts = {}
    if options['encoding']:
        vopts['encoding'] = options['encoding']

    if options['datum_transform'] and options['datum_transform']:
        # list datum transform parameters
        if not options['epsg']:
            grass.fatal(_("Missing value for datum_transform"))

    return grass.run_command('g.proj', flags, vopts, datum_transform=datum_transform)
```



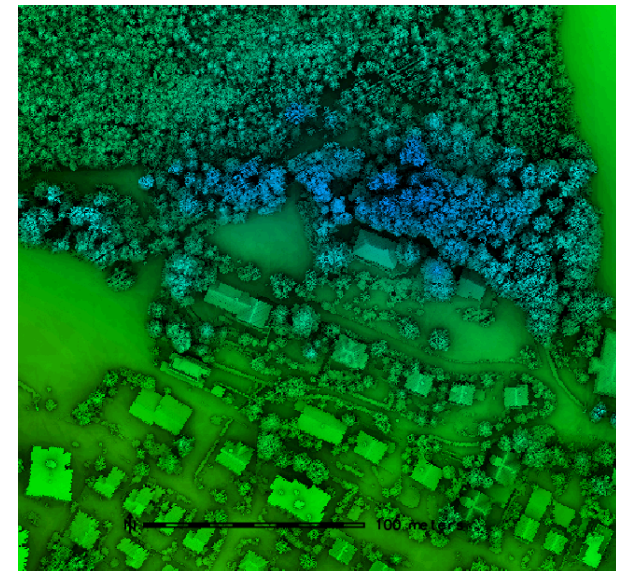
# Neues in GRASS GIS 7.2?

## GRASS GIS 7.2.0 Software:

- Mehr als **1.900 Bugfixes und Verbesserungen** im Vergleich zum letzten stable release 7.0.5
- Zwei Jahre Entwicklung

<https://trac.osgeo.org/grass/wiki/Grass7/NewFeatures72>

- Verbesserungen in
  - **GUI** – Graphische Benutzeroberfläche
  - Module (**commands**)
  - Änderungen an **Bibliotheken**
  - Verbesserte **Portabilität** des Quellcodes
  - Skripting, **Python** interface und Batch Jobs
  - Mehr Beispiele im **Benutzerhandbuch**
- 50 neue GRASS GIS 7.2 **Addons**

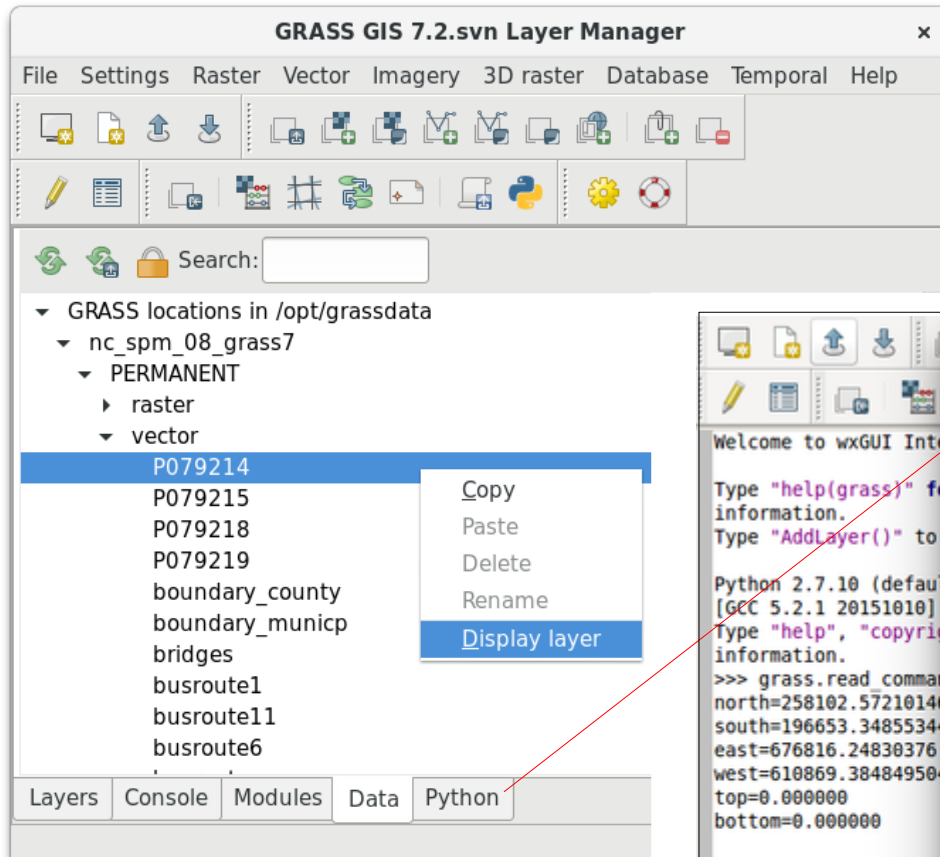


*Skyview factor from LiDAR*

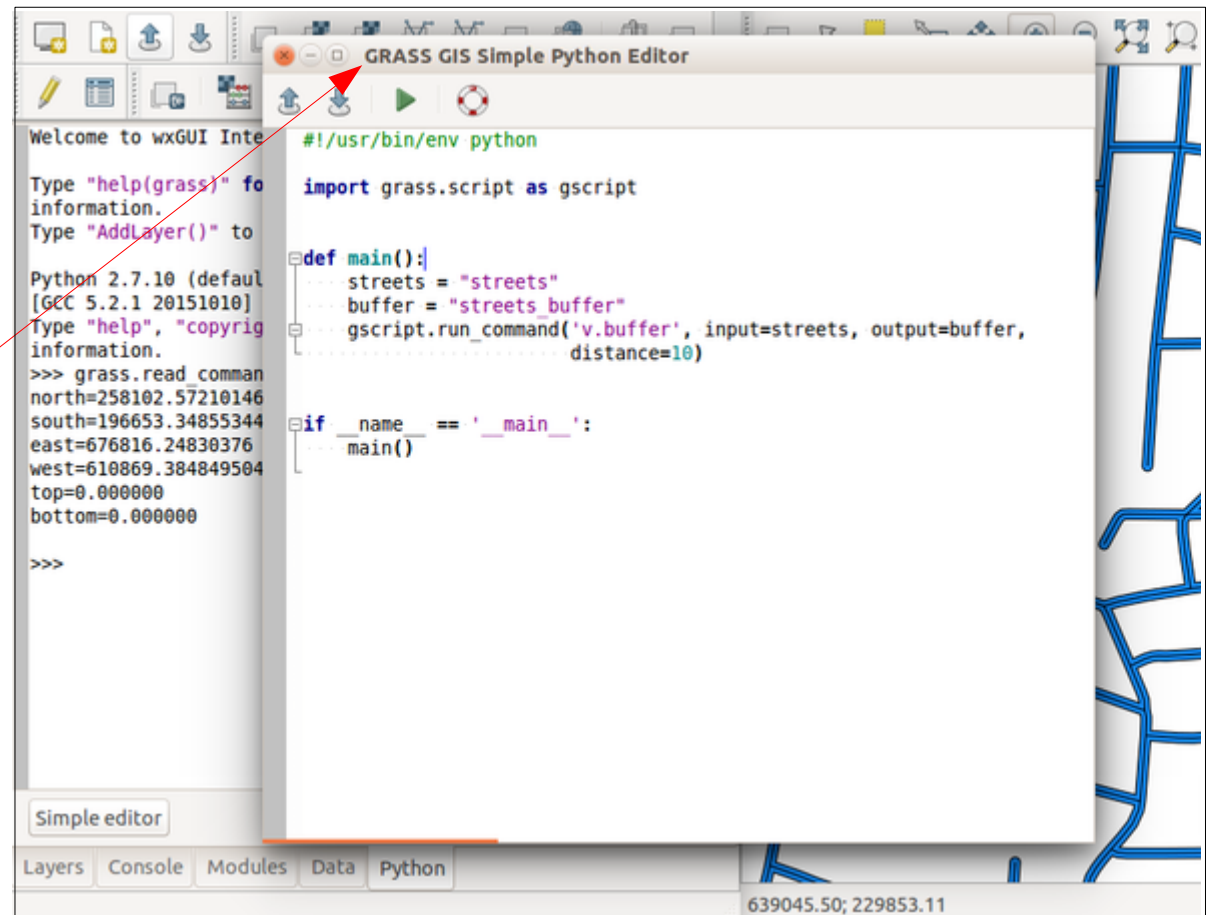
# Neues in GRASS GIS 7.2?



## Graphische Benutzeroberfläche



- Rendering engine ist jetzt multi-threaded
- Neuer Data Reiter
- Neuer, einfacher Python editor



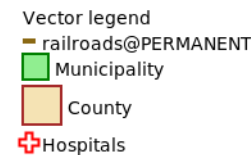
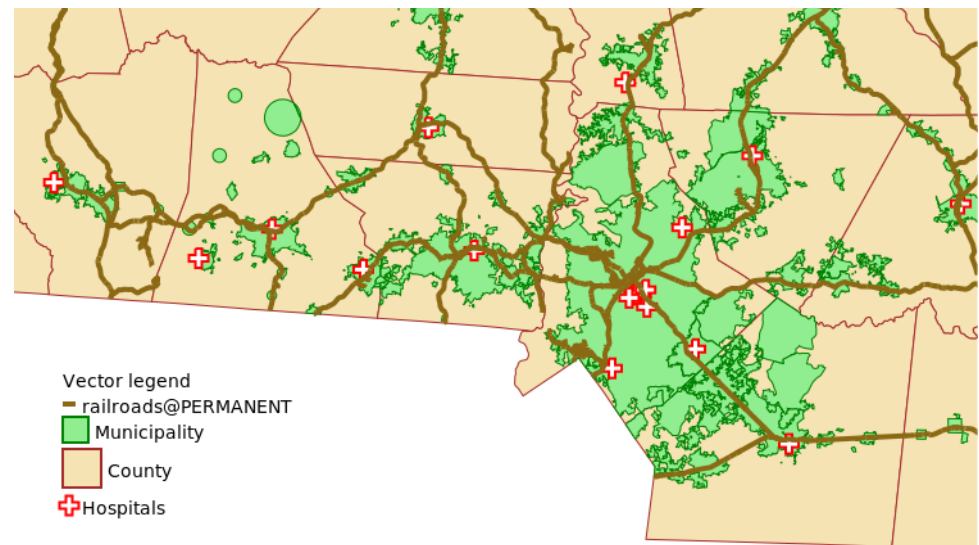
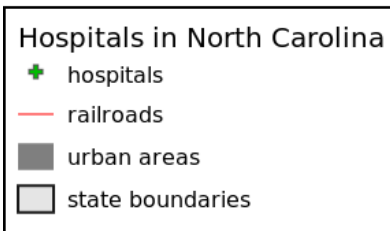
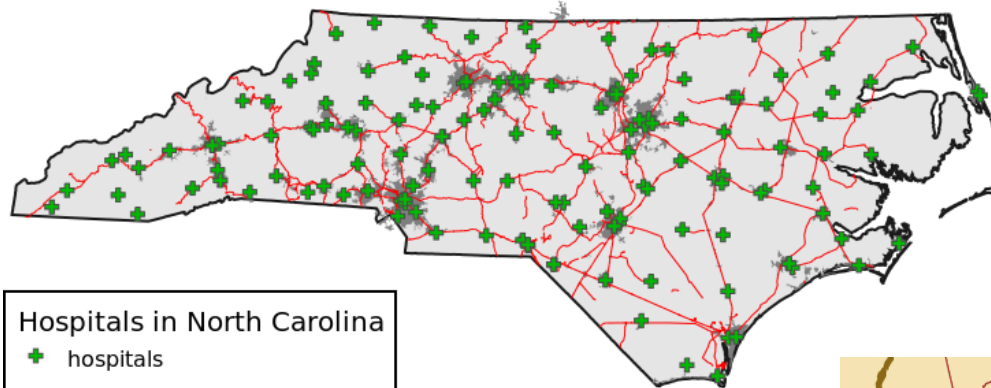
# What's new in GRASS GIS 7.2?



## Graphische Benutzeroberfläche

**Neue Vektorlegenden** (finally!)

... ein Google Summer of Code Projekt

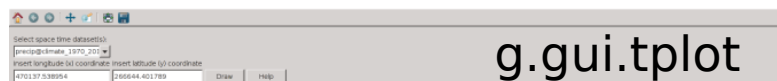
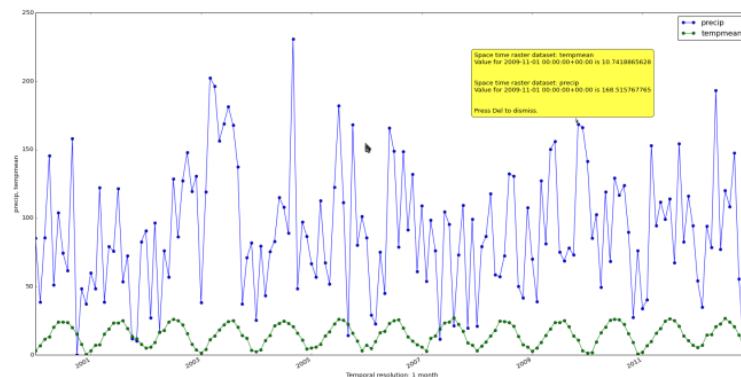
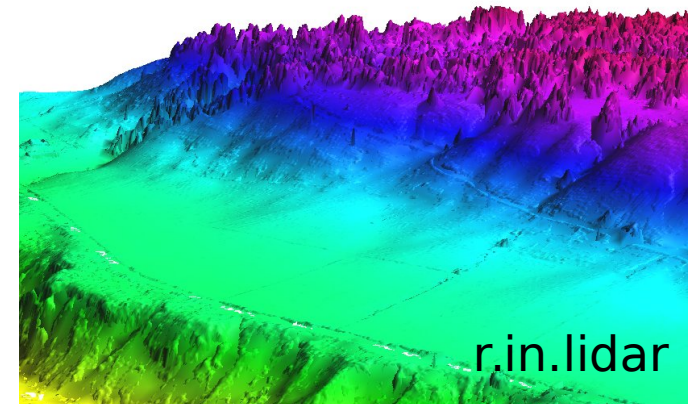


# Neues in GRASS GIS 7.2?

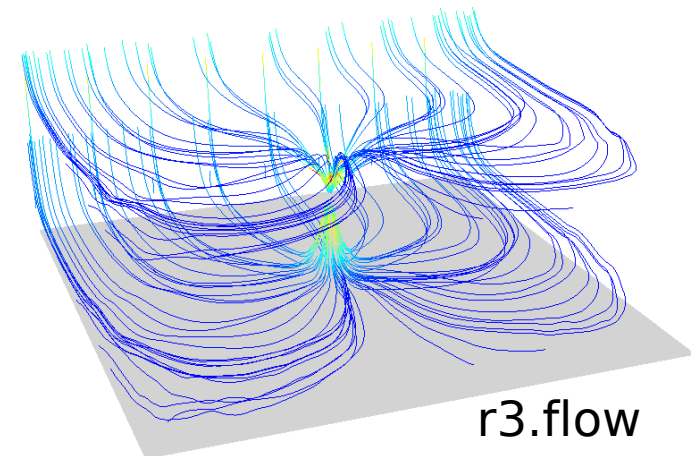


## Neue Modules

- g.search.modules – Suche in GRASS Modulen nach Keywords
- r.in.lidar – Erstellt einen Rasterlayer aus LAS LiDAR Punkten mittels Univariater Statistik
- r3.flow – Berechnet 3D Fließlinien und 3D Fließakkumulation
- v.decimate – Dezimiert eine Punktwolke
- v.out.lidar – Exportiert Vektorpunkte als LAS Punktwolke
- g.gui.tplot – Plottet Werte von temporalen Datensätzen



g.gui.tplot





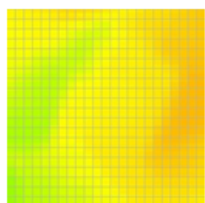
# Neues in GRASS GIS 7.2?

## Verbesserte Dokumentation

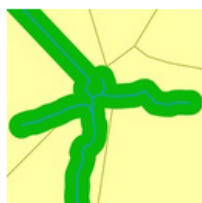


[https://grass.osgeo.org/grass72/manuals/graphical\\_index.html](https://grass.osgeo.org/grass72/manuals/graphical_index.html)

### Graphical index of GRASS GIS modules



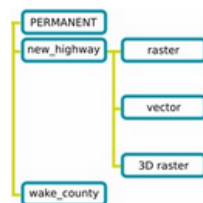
Raster



Vector



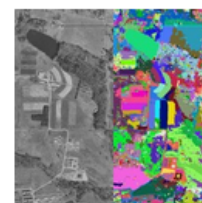
Database



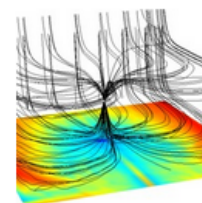
General



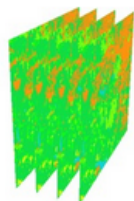
Display



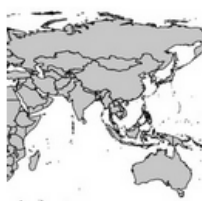
Imagery



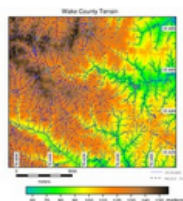
3D raster



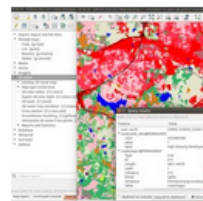
Temporal



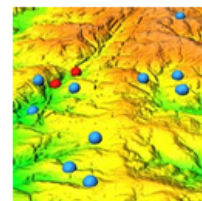
Miscellaneous



Cartography



GUI



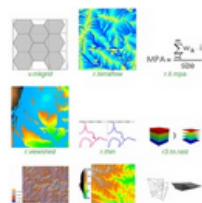
3D view



Python

C library  
{for C/C++}

C library



Gallery

- **r.crater**: Creates meteorites
- **r.damflood**: Estimate the ar
- **r.divergence**: Computes div
- **r.diversity**: Calculate divers
- **r.droka**: Calculates run-out
- **reuro\_ecosystem**: Sets colc
- **r.exdel**: Quantification of no
- **r.fidimo**: Calculating fish dis
- **r.findtheriver**: Find the strea
- **r.flexure**: Computes lithospl
- **r.flip**: Flips an image.

Addons

[Main index](#) | [Topics index](#) | [Keywords index](#) | [Graphical index](#) | [Full index](#)

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# Neues in GRASS GIS 7.2?

## Verbesserter Graphical Modeller

The screenshot displays the GRASS GIS Graphical Modeller interface for a workflow named 'zipcodes\_avg\_elevation.gxm'. The workflow consists of 13 numbered steps:

- (1) r.import raster import
- (2) v.import vector import
- (3) g.region region settings
- (4) v.rast.stats method = average
- (5) v.db.univar
- (6) v.to.rast average raster
- (7) r.colors bgyr color table
- (8) r.colors ipisplay
- (9) d.barscale barscale display
- (10) d.rast raster display
- (11) d.vect vector display
- (12) d.northarrow northarrow display
- (13) d.legend legend display

The 'Model parameters' dialog box is open, showing the 'v.import' step selected. The 'Source type' is set to 'File', and the 'File' field is highlighted with a red box. The 'Run' button is also highlighted with a red box. A red arrow points from the 'Run' button in the dialog to the 'Run' button in the main interface.

Der Workflow kann als Python Skript ausgegeben werden!

(inkl. GUI und Kommandozeile)



# Neues in GRASS GIS 7.2?



## Verbesserungen in den Bibliotheken

- Verbesserungen, Updates und Bugfixes in **libproj** und **libgis** (EPSG Definitionen werden nun von PROJ.4 und GDAL verwendet)
- Support für neue **Methoden zur Raster Data Komprimierung**: NONE, ZLIB, LZ4, BZIP2  
→ Rasterdaten sind nun wesentlich kleiner
- Optionaler Support für Raster **NULL file Komprimierung**: Aktuell muss es explizit aktiviert werden mit `export GRASS_COMPRESS_NULLS=1`

Beispiel - EU DEM25m:

uncompressed NULL file:

```
60000000000 Apr 13 2016 ./eu_laea/PERMANENT/cell_misc/eu_dem25/null
```

compressed NULL file:

```
32108798 Jan 3 15:09 eu_laea/PERMANENT/cell_misc/eu_dem25/nullcmpr
```

Ratio:

```
> 32108798 / 60000000000
```

```
[1] 0.005351466 ← 0.5% of original size!
```

# Neues in GRASS GIS 7.2?



## Mehr als 50 neue Addons aus der Community!

... inklusive

- Neue Werkzeuge für Bearbeitung von **Landsat-8** Daten,
- **Bewertung von Landschaftswandel** assessment,
- Berechnung von Geometrie Parametern für Raster Objekte
- **machine learning** Klassifikation
- Approximation einer periodischen **Zeitreihe** und Erstellung einer approximierten Ausgabe
- Zerlegen von Zeitreihen Daten
- Berechnung von **Terrain Ruggedness Index**
- Objekte einer Eingabekarte extrahieren die Objekte einer **clip map** überlagern
- Import GBIF's Artenverteilung, Natura 2000 Geodaten und OSM Daten nach GRASS GIS
- Und vieles mehr:  
siehe <http://grass.osgeo.org/grass7/manuals/addons/>



# Wo gibt es das alles?

## **GRASS GIS 7 Software:**

*Freier Download für MS Windows, MacOSX, Linux und Quellcode:*  
<https://grass.osgeo.org/download/>

*Addons (Erweiterungen aus der Community):*

<https://grass.osgeo.org/grass7/manuals/addons/>

## **Freie Beispieldaten:**

*Umfangreicher Datensatz aus North Carolina (NC)  
... als GRASS GIS Location und in anderen GIS Formaten*  
<https://grass.osgeo.org/download/sample-data/>

## **Anwenderhilfe:**

**Mailinglisten** (auch in mehreren Sprachen):

<https://grass.osgeo.org/support/>

**Wiki:**

<https://grasswiki.osgeo.org/wiki/>

[https://grasswiki.osgeo.org/wiki/R\\_statistics/rgrass7](https://grasswiki.osgeo.org/wiki/R_statistics/rgrass7)

**Handbuch:**

<https://grass.osgeo.org/documentation/manuals/>